California Marine Life
Protection Act Initiative
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To: **MLPA Blue Ribbon Task Force**
From: **MLPA Initiative Staff**
Subject: **Central Coast MPA Packages – Revised Summary of Staff Evaluation of MLPA Goal 3 and SAT Evaluation of Replication**
Date: **March 7, 2006**

Summary

All proposed marine protected area (MPA) packages for the central coast provide better recreational, educational and study opportunities than the existing condition (Package 0). Packages 1, 2, 3, S and AC are comparable in the accessibility of MPAs, with 16-20 MPAs in each package within 15 miles of major central coast ports and population centers.

Packages 2 and AC include more state marine reserves (SMRs) and high protection state marine conservation areas (SMCAs) that are valued by non-consumptive recreational uses (such as non-consumptive diving, photography, wildlife viewing, kayaking, etc.) in popular areas such as the Monterey waterfront and Carmel Bay that are very accessible. Package 1 provides more consumptive recreational opportunities (recreational fishing, including shore-fishing, skiff/kayak fishing, spear-fishing, and commercial party boat fishing) in lower protection SMCAs in those same highly popular sites.

Based on an evaluation of habitat replication needed for scientific studies, all packages provide comparable replication of shallow habitats and all have minimal replication of most deepwater habitats. Overall, the packages met minimum replication criteria (at least 3 replicates) in all MPAs about equally well. All packages protect shallow water habitats with a similar number of MPAs, but are much less protective of deep water hard and soft bottom habitats and canyons.

In terms of replication of habitats in SMRs, soft bottom (100-200m), hard bottom (100-200m and >200m) habitats are only represented in one SMR in packages 2 and AC and are not represented at the minimum area criteria in SMRs in packages 1, 3 and S. Similarly, shallow and deep canyon habitats are poorly represented in SMRs in all packages. Eelgrass appears to be poorly replicated in SMRs in all packages, though this is a data resolution issue, as all packages actually include at least two examples of this rare habitat though below the minimum area criteria. Canyon habitat is rare in the rest of the biogeographic region, so minimal replication in the central coast makes meeting the replication requirement for the biogeographical region more difficult.

All packages propose MPAs near marine research institutions on the central coast. Packages 2, 3, S and AC provide slightly better educational and study opportunities as those packages would expand more of the existing reserves that have a long history of scientific study and

generally include more established monitoring sites than does Package 1. Table 1 provides a summary of the evaluation across packages.

Evaluation

Goal 3 of the Marine Life Protection Act (MLPA) is:

> *"To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity*."

MLPA Initiative staff and the Master Plan Science Advisory Team (SAT) evaluation subteam used some simple metrics to evaluate how well the proposed central coast MPA packages address goal 3 of the MLPA. This evaluation compared packages relative to one another and included the following packages:

- Package 0 (existing MPAs)
- Package 1 (revised 2/9/06 version)
- Package 2 (revised 2/9/06 version)
- Package 3 (revised 2/9/06 version)
- Package S (2/22/06 version)
- Package AC (12/15/05 version)

The MLPA Initiative staff evaluation of recreational opportunities focused on accessibility of different types of MPAs to the public, specifically:

- *Distance of proposed MPAs from population centers*. The number of MPAs within 0-15 and 15-50 miles of a population center (Santa Cruz, Monterey, San Luis Obispo or Santa Maria) was determined for each package.
- *Distance of proposed MPAs from major ports*. The number of MPAs within 0-5, 5-15, and 15-50 miles of a port or harbor (Santa Cruz, Moss Landing, Monterey, Morro Bay or Port San Luis) was determined for each package. The 0-5mi distance reflects potential use of MPAs by users with small craft.
- *Stakeholder input*. Input from the regional stakeholders at the Central Coast Regional Stakeholders Group meetings, as well as the proponents' rationales provided with packages, provided qualitative information on how packages and specific MPAs meet different user group needs.

The MLPA Initiative staff and SAT evaluation of educational and study opportunities focused on:

- *A SAT evaluation of replication of habitats within the study region.* The number of proposed MPAs (high protection MPAs and all MPAs) that contain each habitat was determined relative to the MLPA Master Plan Framework guidelines for replication (see Appendix A for evaluation summary).
- *Staff evaluation of replication of habitats in SMRs.* In addition, the MLPA requires replication of all habitats in state marine reserves (SMRs) across the biogeographical region [Fish and Game Code, Section 2857 (c)(3)]; the contribution of the central coast MPAs toward that biogeographical requirement was also evaluated.

- *Distance of proposed MPAs from major marine research institutions*. The number of MPAs within 0-15 and 15-50 miles of the University of California, Santa Cruz Long Marine Lab; Monterey Bay Aquarium Research Institute; Hopkins Marine Station; or California Polytechnic Univeristy, San Luis Obispo was determined for each package.
- *Number of established marine research monitoring sites*. The number of sites monitored by Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), Cooperative Research and Assessment of Near-shore Ecosystems (CRANE), and Multi-Agency Rocky Intertidal Network (MARINe) within MPAs was calculated for each package.

Recreational Opportunities

Goal 3 describes recreational opportunities in "*ecosystems that are subject to minimal human disturbance*" which we chose to interpret as SMRs and high protection SMCAs; these designations of MPAs are often preferable to many non-consumptive users (such as non-consumptive divers, photographers, wildlife viewers, kayakers, etc.). However, it should be noted that for consumptive uses (recreational fishing, including shore-fishing, skiff/kayak fishing, spear-fishing, and commercial party boats), users likely prefer accessible MPAs that allow recreational fishing (state marine parks [SMPs] and many SMCAs) and are considered to offer moderate to low protection. There was also recognition by the Central Coast Regional Stakeholder Group (CCRSG) members that MPAs which restrict fishing may enhance recreational opportunities inside those MPAs for those who like to see large fish, as well as potentially benefiting recreational opportunities in adjacent open areas by providing better fishing through spillover of targeted species.

For recreational opportunities, all packages include a comparable number of MPAs that can be considered easily accessible (<15 miles) from population centers. There are more high protection MPAs proposed near (<15 mi) population centers than moderate or low protection MPAs. Packages ranged from 16 to 20 MPAs within 15 miles of population centers, with 6-8 low protection MPAs that allow some fishing, and 10-14 high protection MPAs with limited take (Figure 1). A measure of distance of MPAs from major ports and harbors showed that all packages had from 8-13 MPAs (7-9 high protection and 8-13 lower protection) within 5 miles of major ports and harbors (Figure 2).

For recreational opportunities, the issues are not so much overall numbers of accessible MPAs, rather than the types of activities allowed in specific popular sites, such as the Monterey waterfront and Carmel Bay that are highly valued by many different consumptive and non-consumptive user groups. Based upon input from stakeholders at the CCRSG meetings and rationale narratives provided by package proponents, non-consumptive users generally prefer the MPA designs incorporated into Package 2, which offer more high protection MPAs at popular and more accessible sites; consumptive users generally prefer Package 1, which offers more fishing opportunities at popular and more accessible sites.

Educational and study opportunities

The SAT subteam evaluation of replication of habitats in MPAs is included as Appendix A. Based on an evaluation of habitat replication needed for scientific studies, all packages provide comparable replication of shallow habitats and all have minimal replication of most deepwater habitats. Overall, the packages met minimum replication criteria (at least three replicates) in all

MPAs about equally well. All packages protect shallow water habitats with a similar number of MPAs, but are much less protective of deep water hard and soft bottom habitats and canyons.

The MLPA requires replication of all habitats in SMRs in each biogeographical region (the central coast is included in the Point Conception to Oregon border biogeographical region). The central coast packages provide replicates of most habitats towards this requirement. Submarine canyon habitat is rare in state waters; the central coast has the vast majority (around 90%) of this habitat in the biogeographical region, and therefore could more easily contribute towards replication of this habitat than other study regions to the north. All packages provide only one to three replicates of canyon habitat by depth zone.

Educational and study opportunities are improved by the presence of MPAs near research institutions and MPAs that include established monitoring sites. All packages include some MPAs (ranging from 16 to 20 MPAs, with 11-14 of them high protection level) within 15 miles of major marine research institutions (Figure 3). All packages retain or expand some existing MPAs with a long history of scientific studies (eg. Hopkins SMR and Big Creek SMR). All packages proposed to expand the existing Hopkins SMR to include more area. Packages 2, 3, S and AC also propose expanding the existing Big Creek SMR to include more deepwater habitat and to be larger in size to improve effectiveness.

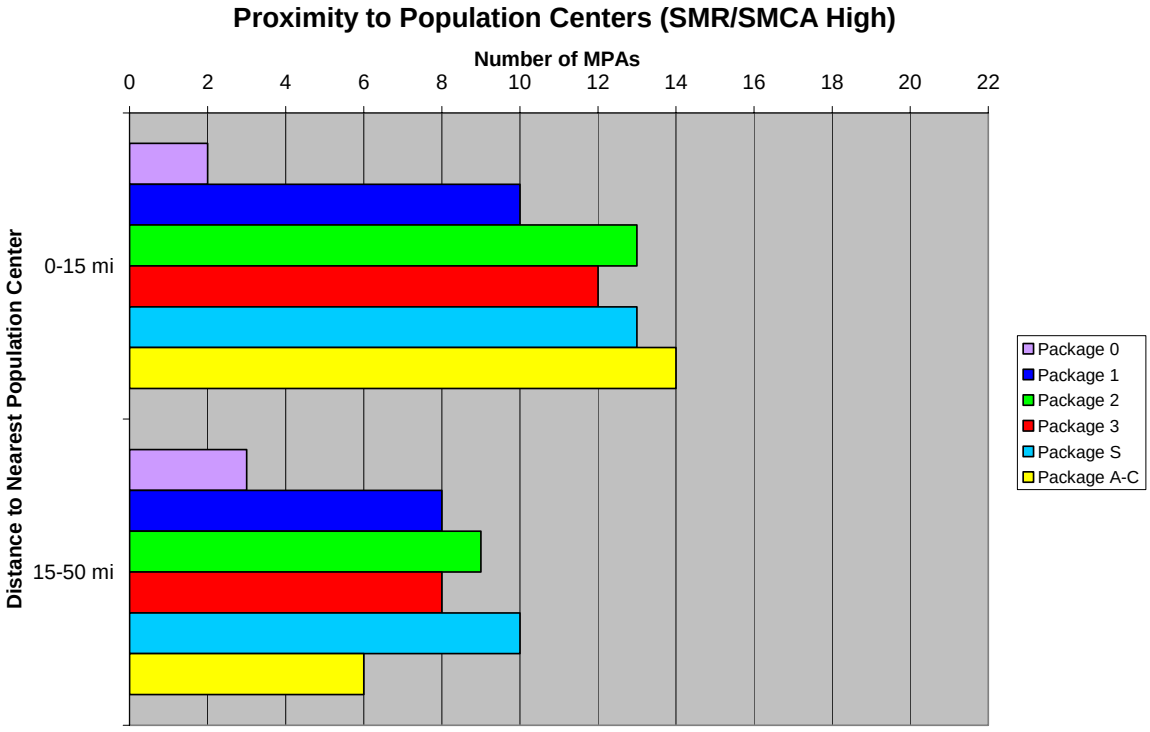
Packages 2, 3, S and AC generally include more established monitoring sites from the PISCO, CRANE, and MARINe programs inside of MPAs (especially SMRs and high protection SMCAs) than does Package 1 (Figure 4).

Table 1: Summary of Goal 3 Evaluation of Central Coast MPA Packages

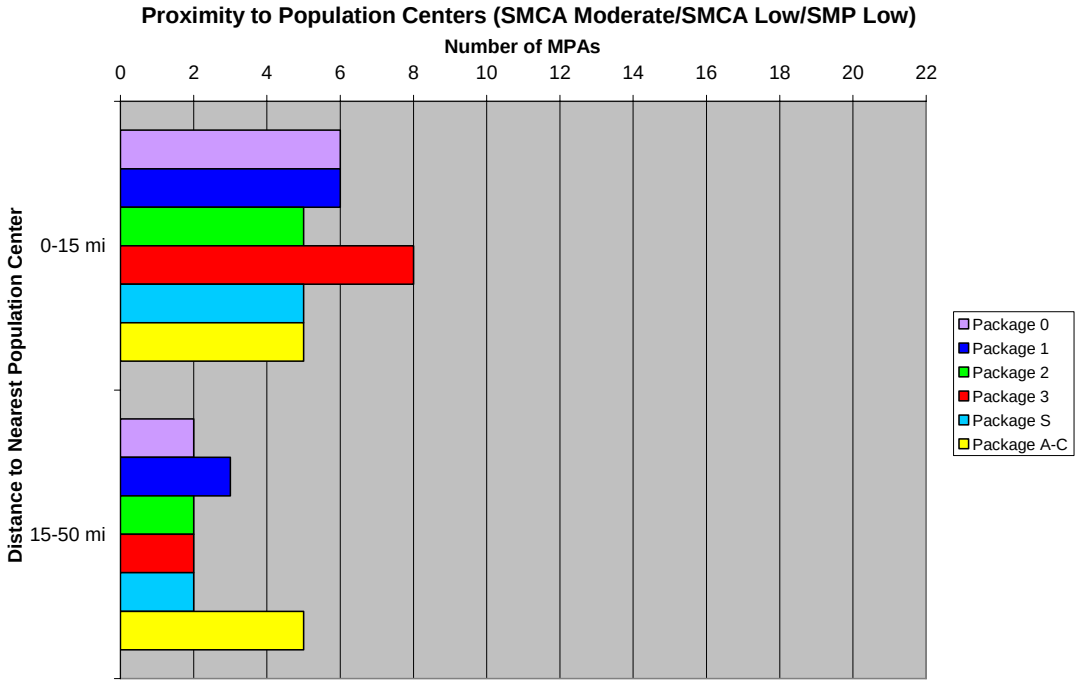
	Package 1	Package 2	Package 3	Package S	Package AC
Recreational Opportunities:					
Proximity to ports and population centers	All packages have comparable number of MPAs near population centers and ports.				
Stakeholder perceptions	Package 1 provides better consumptive recreational opportunities. Package 2 provides better non-consumptive recreational opportunities.				
Educational and Study Opportunities:					
Replication of habitats (SAT evaluation)	Overall the packages met replication criteria equally well. All packages protect shallow habitats with a similar number of MPAs. All packages lack replication of deep water soft and hard bottom and canyon habitats.				
Proximity to marine research institutions	All the packages have high protection MPAs near research institutions. All packages would retain and expand Hopkins SMR and retain Big Creek SMR, two MPAs that have a long history of scientific study. Packages 2, 3, S, and AC would also expand Big Creek SMR.				
Established monitoring sites	MPAs in Package 1 contains the fewest established monitoring sites	MPAs in packages 2 and S contain the most established monitoring sites	MPAs in packages 3 and AC contain an intermediate number of established monitoring sites	MPAs in packages 2 and S contain the most established monitoring sites	MPAs in packages 3 and AC contain an intermediate number of established monitoring sites

Figure 1: Proximity of proposed MPAs to major population centers (Santa Cruz, Monterey, San Luis Obispo or Santa Maria).

1a) High protection MPAs (SMR and SMCA-High)



1b) Lower protection MPAs (SMP-low, SMCA-moderate, SMCA-low)



1c) All MPAs

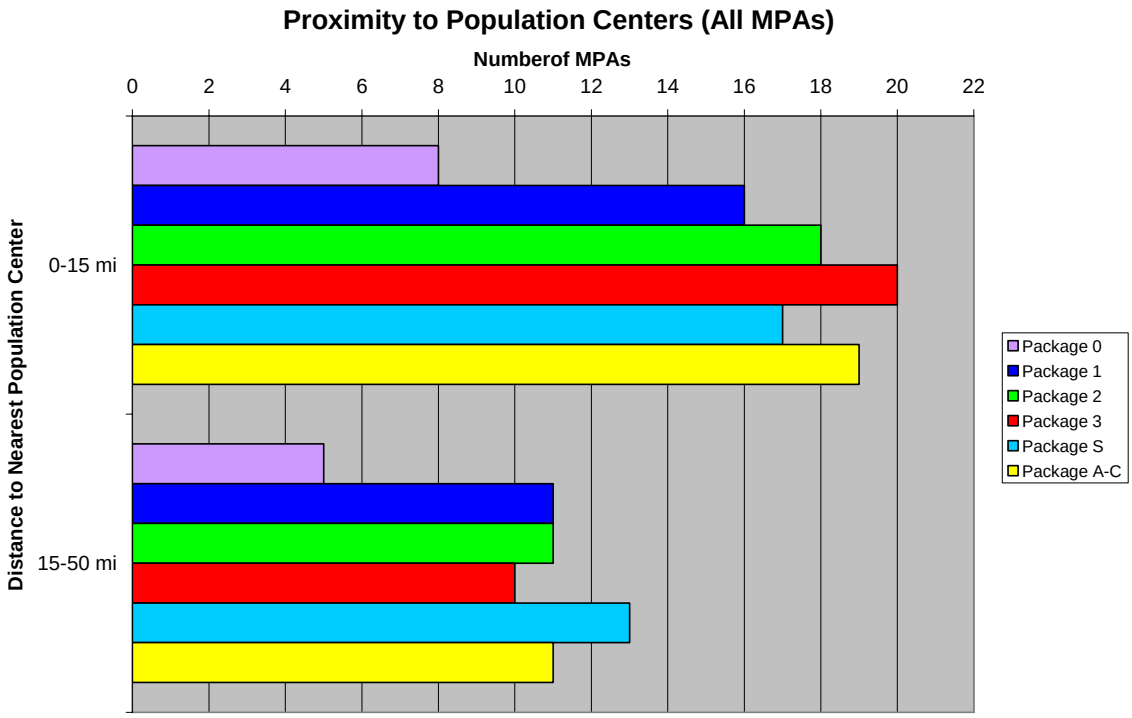
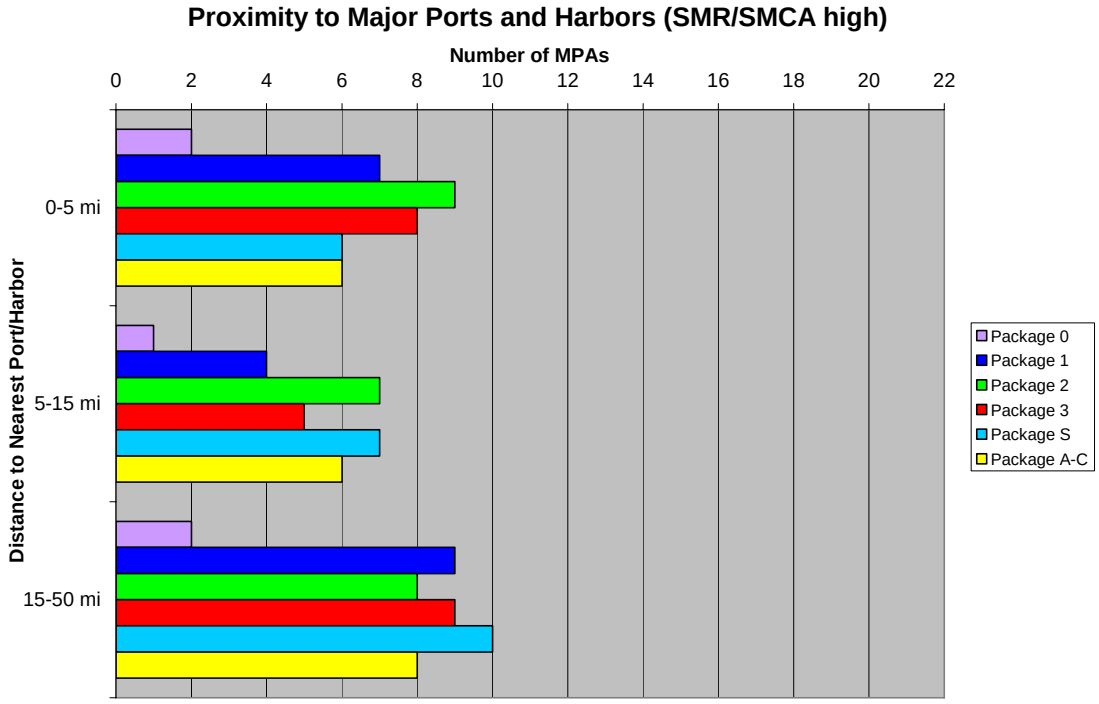
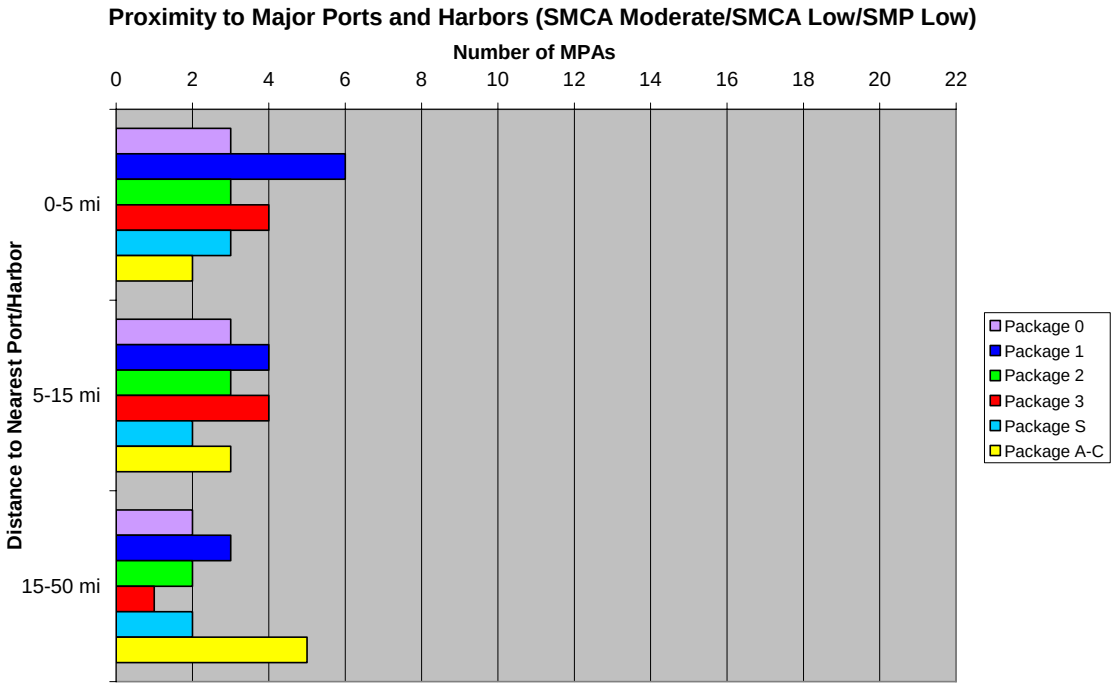

Proximity to Population Centers (All MPAs)
Numberof MPAs
0
2
4
6
8
10
12
14
16
18
20
22
Distance to Nearest Population Center
0-15 mi
15-50 mi
Package 0
Package 1
Package 2
Package 3
Package S
Package A-C

Figure 2: Proximity of proposed MPAs to major ports or harbors (Santa Cruz, Moss Landing, Monterey, Morro Bay, and Port San Luis)

2a) High protection MPAs (SMR and SMCA-High)



2b) Lower protection MPAs (SMP-low, SMCA-moderate, SMCA-low)



2c) All MPAs

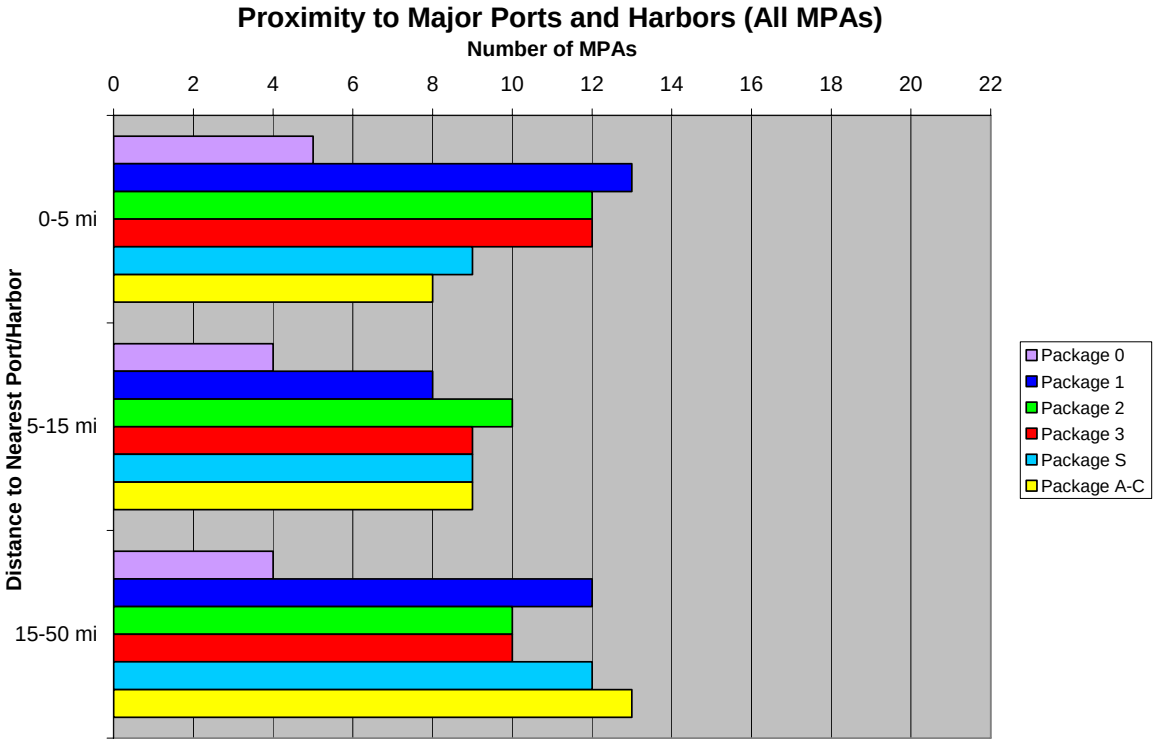
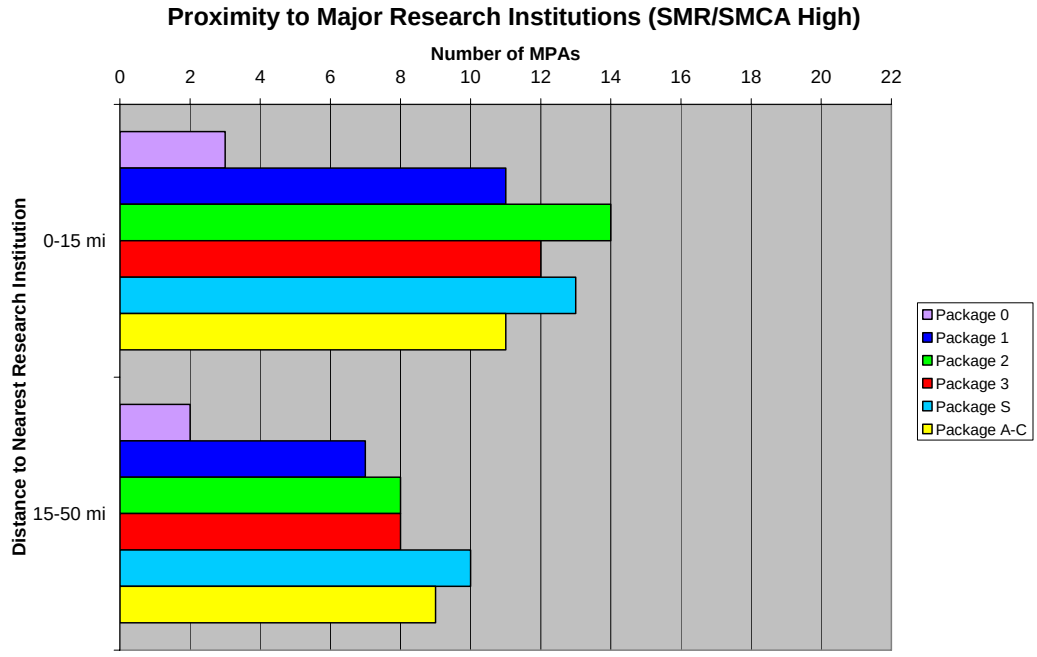

Proximity to Major Ports and Harbors (All MPAs)
Number of MPAs
0
2
4
6
8
10
12
14
16
18
20
22
Distance to Nearest Port/Harbor
0-5 mi
5-15 mi
15-50 mi
Package 0
Package 1
Package 2
Package 3
Package S
Package A-C

Figure 3: Proximity of proposed MPAs to major marine research institutions (University of California, Santa Cruz Long Marine Laboratory; Monterey Bay Aquarium Research Institute; Hopkins Marine Station (Stanford University); CalPoly San Luis Obispo)

3a) High protection MPAs (SMR and SMCA-high)



3b) All MPAs

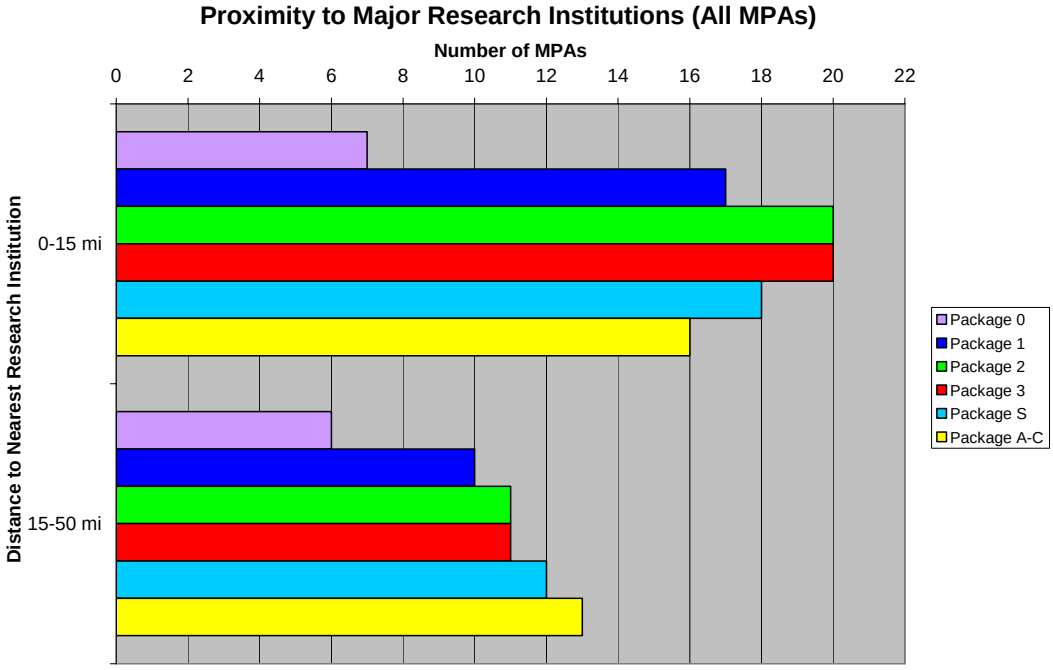
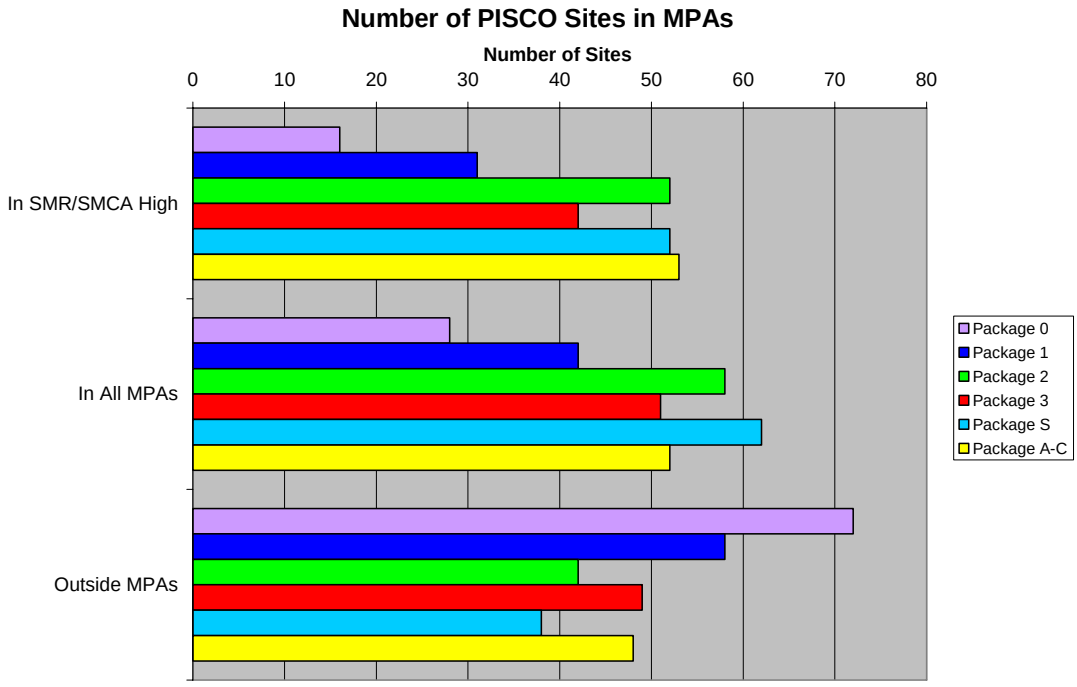
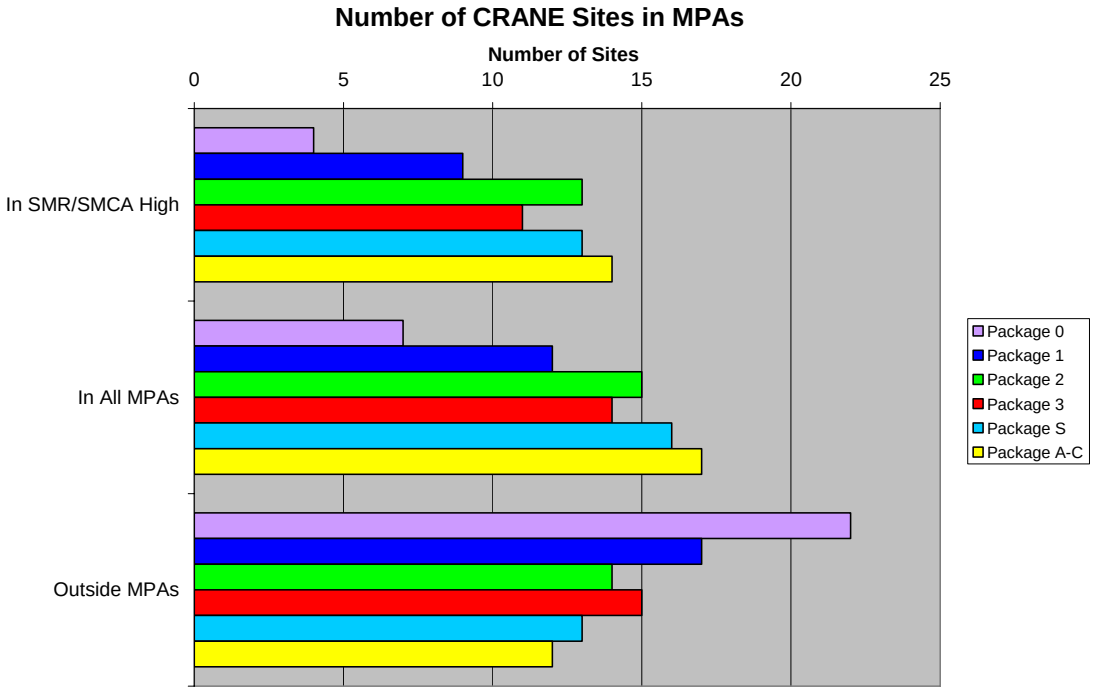


Figure 4: Number of established monitoring sites (PISCO, CRANE, and MARINe programs) inside and outside of proposed MPAs.

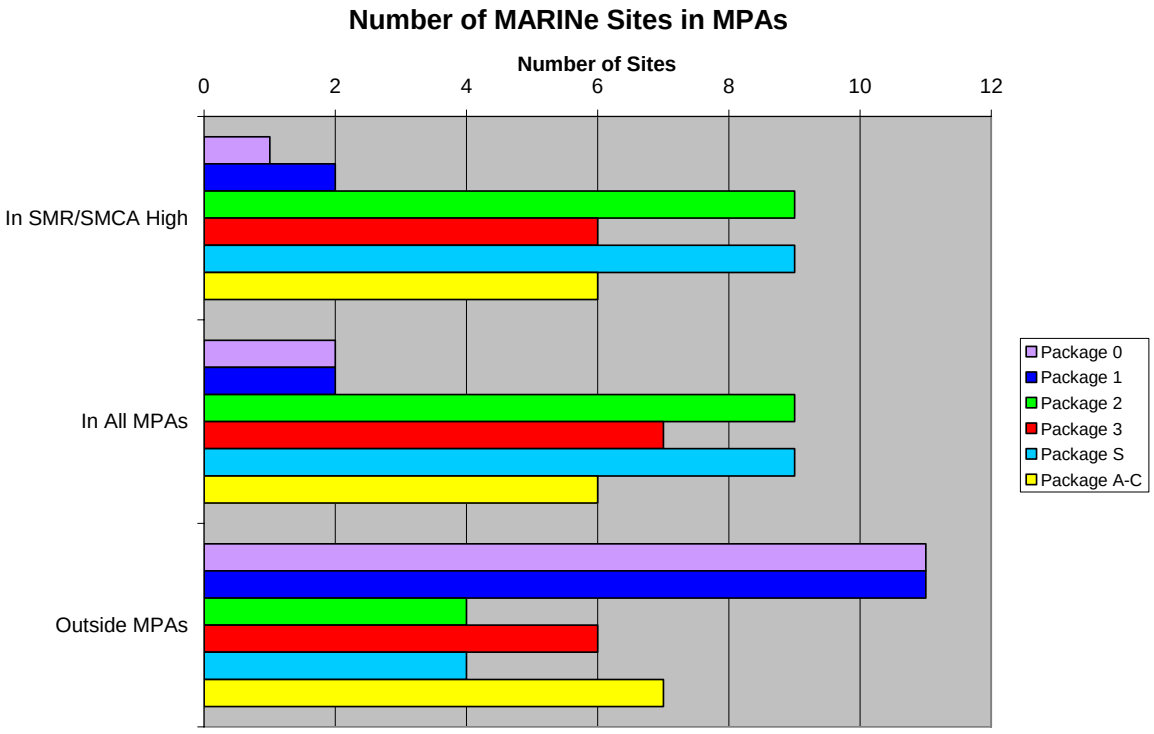
4a) Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) sites



4b) Cooperative Research and Assessment of Near-shore Ecosystems (CRANE) sites



4c) Multi-Agency Rocky Intertidal Network (MARINe) sites



Appendix A: DRAFT Summary of SAT Evaluation of Replication of Habitats in Proposed Central Coast MPA Packages (March 7, 2006)

Criteria: The same criteria for habitat representation were used for this analysis as for the size and spacing analysis for most habitats. The exceptions were for kelp beds and submarine canyons. An MPA with any persistent kelp bed (kelp present in three of four years), no matter how small, was considered to have kelp habitat. Likewise, an MPA with any amount of canyon habitat, no matter how small, was considered to have that canyon type.

The evaluation of replication was conducted using four different groupings of MPAs: (1) state marine reserves (SMR), (2) those with high levels of protection (SMR and SMCA High), (3) those with low levels of protection (SMP-low, SMCA Moderate and SMCA Low), and (4) all MPAs together. Habitats were considered adequately replicated with a minimum of three replicate MPAs.

Analysis

Figure A1 shows that all five packages have a very similar number of replicates of SMRs across habitat types, with more replication of common and shallow habitat types and less replication of rare and deep habitats. Soft bottom (100-200m), hard bottom (100-200m and >200m) habitats are only represented in one SMR in packages 2 and AC and are not represented at the minimum area criteria in SMRs in packages 1, 3 and S. Similarly, shallow and deep canyon habitats are poorly represented in SMRs in all packages. Eelgrass appears to be poorly replicated in SMRs in all packages, though this is a data resolution issue, as all packages actually include at least two examples of this rare habitat though below the minimum area criteria.

Replication of habitats in high protection and low protection MPAs is shown in Figures A2 and A3, respectively. Most habitats are adequately replicated (at least three replicates) in all packages in high protection MPAs. The exceptions include soft bottom (100-200m), hard bottom (100-200m, >200m) and canyon (0-30m) in all packages. Deep canyon habitats are better replicated in Packages 2, 3 and S than in packages 1 and AC.

Overall, the packages met replication criteria in all MPAs about equally well (Figure A4). All packages protect shallow water habitats with a similar number of MPAs, but are much less protective of deep water hard and soft bottom habitats and canyons.

It should be noted that some MPAs have very small amounts of some habitats (ca. 0.5 sq. mi) but were counted in totals as being equal to MPAs with much larger areas of protected habitat. Also, some MPAs are listed as not having a particular habitat type but that might be found – with higher resolution data sets - to contain it. Significant differences among packages will more likely be found in the areas of habitat protected, and in the localities protected, rather than in number of protective MPAs defined in the fashion allowed by current habitat data.

Figure A1: Number of replicates of proposed state marine reserves in each package that contain selected habitats.

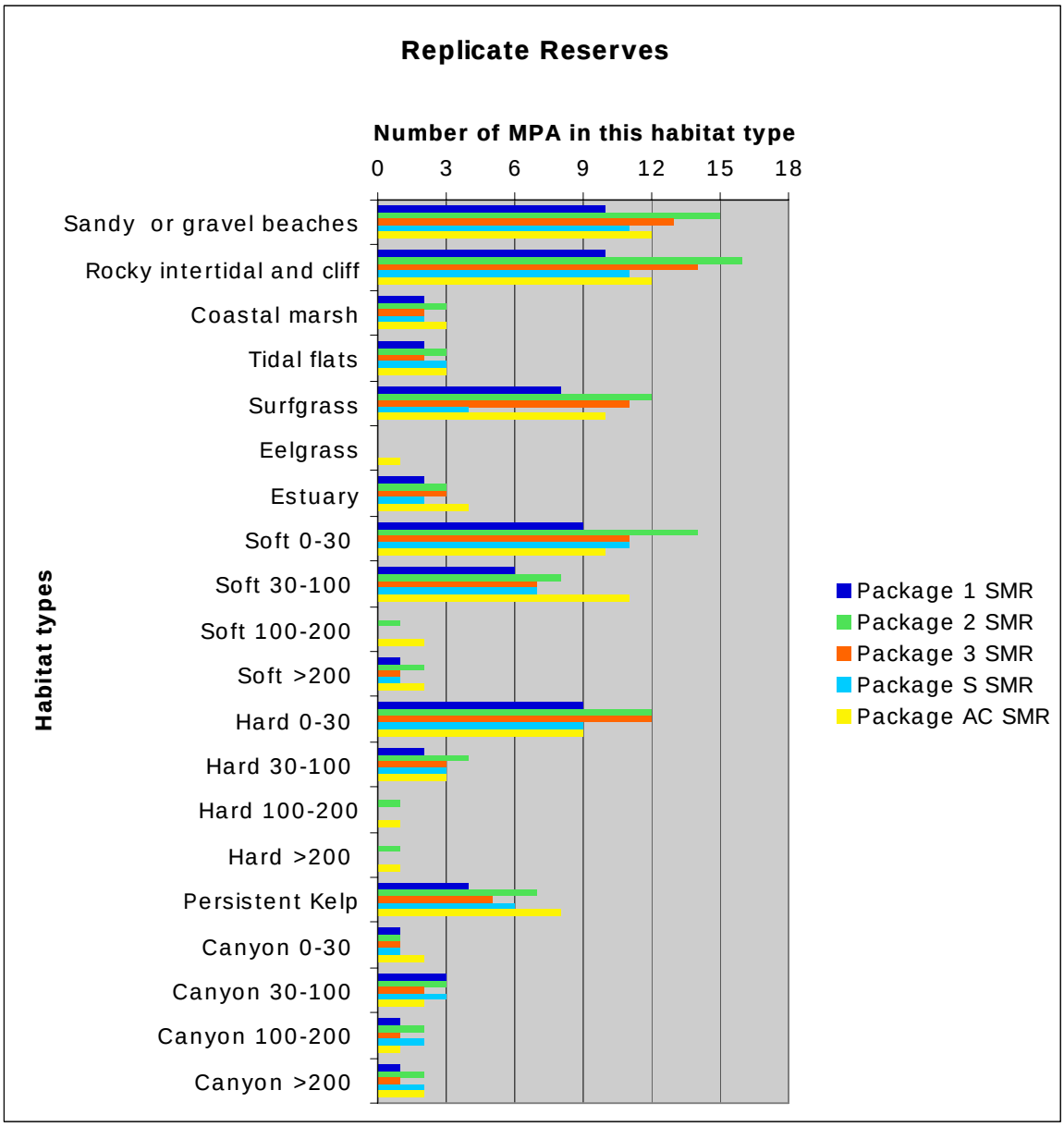


Figure A2: Number of replicates of proposed high protection MPAs (SMR or SMCA-high) in each package that contain selected habitats.

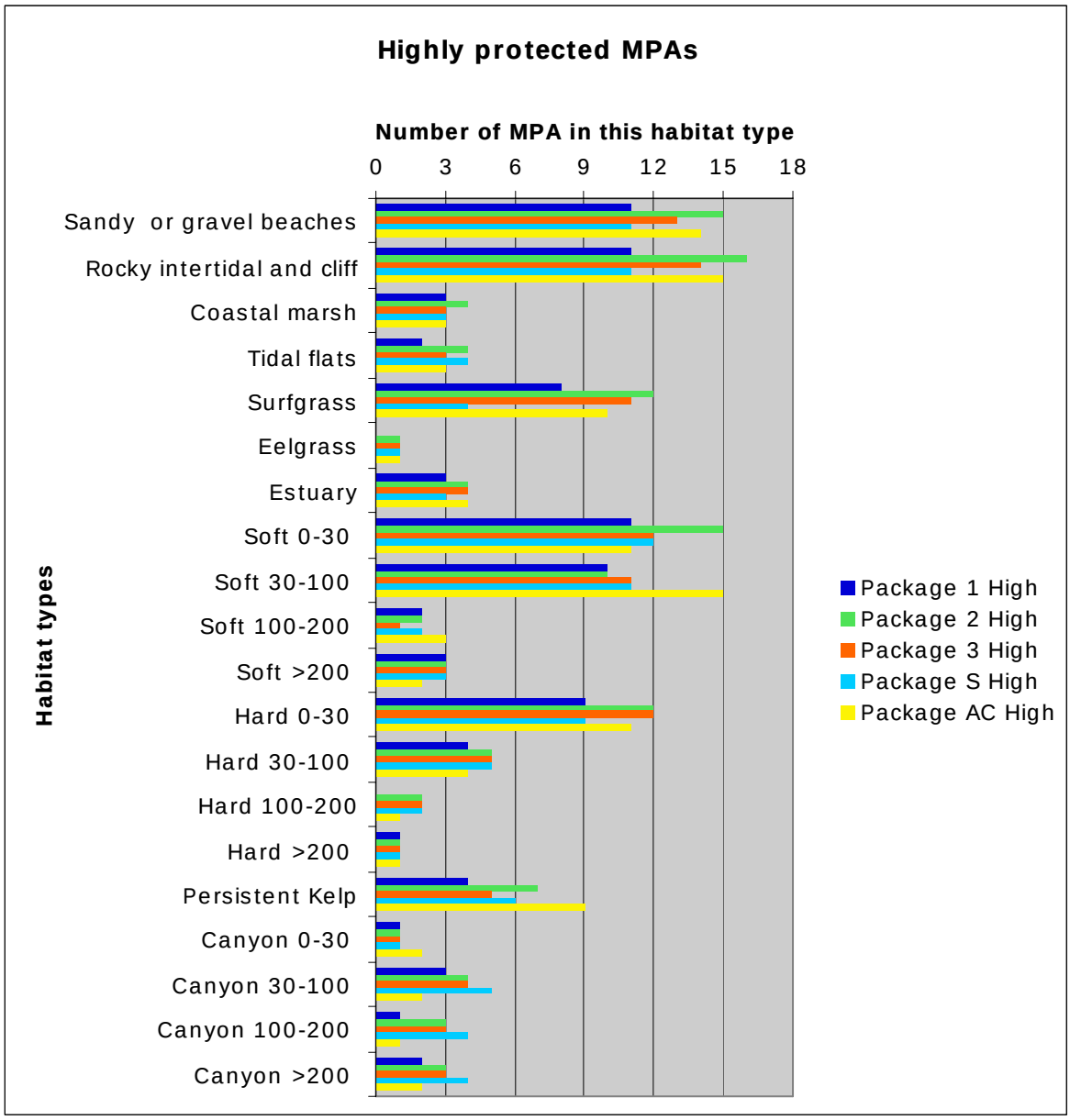


Figure A3: Number of replicates of proposed low protection MPAs (SMCA-moderate, SMCA-low, or SMP-low) in each package that contain selected habitats.

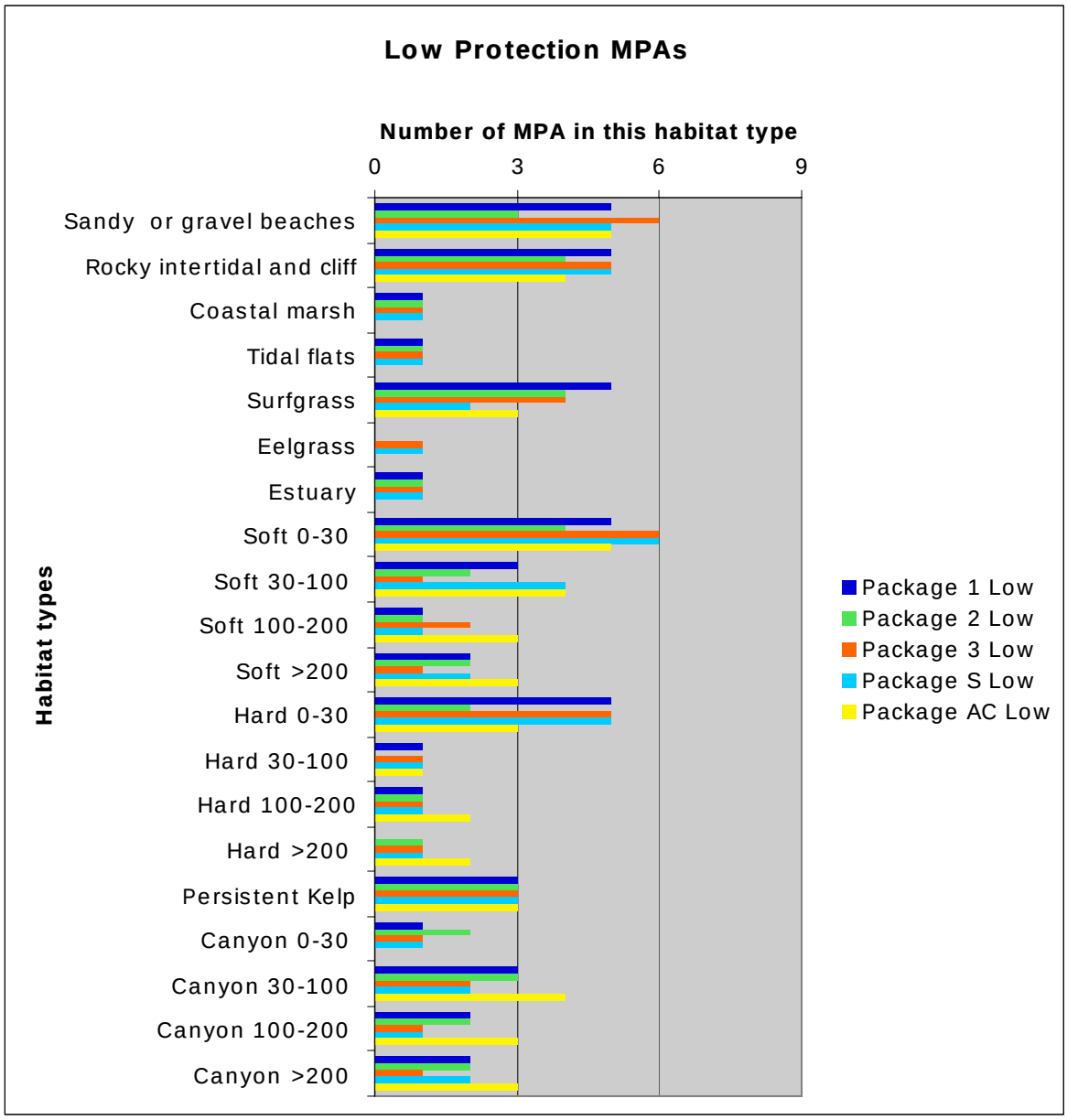


Figure A4: Number of replicate proposed MPAs in each package that contain selected habitats.